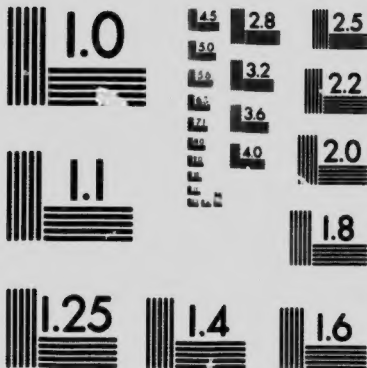




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Some Startling Facts About Canada's Forests

Raw Material for Wood Using Industries in a Very Serious Condition.

**Export of Fee Land Wood
Must be Stopped.**

FRANK J. D. BARNJUM
ANNAPOLIS ROYAL,
NOVA SCOTIA

"The million or more cords of wood that is being annually shipped to the United States, returning only about 15 million dollars, if made into pulp and paper here would not only enrich this country to the extent of more than *eighty million dollars* per year, but would prolong the life of all our paper mills, a period of at least five or six years beyond their present expectancy.

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Some Startling Facts About Canada's Forests

Raw Material for Wood Using Industries in a Very Serious Condition

**Export of Free Land Wood
Must be Stopped**

The time has now fully arrived when an embargo or export duty should be placed on the large amount of free land wood that is being shipped across the line from the principal pulpwood producing provinces of Quebec, Ontario and New Brunswick. (Pulpwood exports from Nova Scotia are practically negligible, amounting to only 770 cords in 1917, the last Government report available.)

These provinces now have enormous investments in pulp and paper mills which are increasing in number every year, and it seems incomprehensible that the owners and security holders of these splendid monuments to Canadian industry and brains should longer sit idly by and allow this steady stream of raw material to slip away from their very mill doors. The consumption of pulpwood in Canada has reached such enormous proportions that a halt should be called in such suicidal policy.

Surely Mr. Phillip T. Dodge, President of the International Paper Company, who is in a position to know better than any other authority, sounded a sufficient warning to Canada when he made the statement that the pulpwood supply of the Eastern States was practically exhausted and that they must look to Canada for their future supply.

There are two ways that the shipment of this wood can be prevented, one is by an embargo or export duty created by the Provincial governments, and the other is by a combination of the Canadian mills purchasing all this free land wood year by year and making a division of the same on a basis of the shortest rail haul to the various mills.

The settler and farmer will also be benefited as

with this wood all manufactured in Canada he will have a market nearer home, not only for his wood but a bigger and better market for his farm produce as well.

To offset the tremendous loss of standing timber caused by the spruce bud worm in Canada during the past two or three years, no paper mill should cut a living growing tree on its own limits just as long as it can buy a cord of this fee land wood that is daily crossing the line, simply cutting the burned and blown down timber and salvaging such worm killed timber as is economically possible.

I am not cutting a tree on my own lands while I can buy a cord of wood; notwithstanding the fact that I have the largest amount of standing timber of any pulp company in Canada, based on the capacity production of my mills, and to which holdings I am adding as rapidly as possible.

The million or more cords of wood that is being annually shipped to the United States, returning only about 15 million dollars, if made into pulp and paper here would not only enrich this country to the extent of more than eighty million dollars per year, but would prolong the life of all of our pulp and paper mills a period of at least five or six years beyond their present expectancy.

This large additional income is doubly important in view of the unfavorable trade balance between the two countries, and would to a large extent help to correct the present deplorable condition of exchange.

Canada is in a very independent position as the United States simply must have our paper—she has no alternative. Newsprint cannot now be landed in New York from Scandinavia for less than \$170 per ton. 8½¢ per pound, and even then only in limited quantities. Our production has increased to such an extent that we are now producing a total of 800,000 tons of paper per year, which is very nearly half the consumption of the United States, and we shall very soon be producing much more than half, owing to the fact that many of the American mills will be forced out of business from lack of a wood supply. Strange as it may seem many of their mills do not own an acre of timberland. With the exception of the Oxford Paper Company, and the Great Northern Paper Company, the larger mills in the United States own timberlands

which will provide a supply adequate only for a very few years. The greatest asset the paper companies have today who own timberlands, is their raw material supply. But the American mills should be stopped from drawing the life blood of our Canadian wood using industries. They can find no fault with such action as self preservation is the first law of nature and I am very sure if the case were reversed the American mill owners would have taken this action long before this. However friendly neighbors may be, it is hardly reasonable to expect the mill owner in one country to allow the raw material to be removed, almost from his mill yard, to supply the mills of another country with the possible closing down of his own industry.

Some may question the power of the provincial government to act, but the highest legal tribunal of the State of Maine ruled that it was constitutional for a state to regulate even the size of the trees a man may cut on his own private land. Anyone who bought land in this country bought it subject to the laws then existing, as well as to any regulations that might be imposed in the future.

Annual Increment Leaves a Net Loss.

The wood resources of Canada have been so grossly exaggerated that very few are aware how meagre our supply of available wood really is. I have spent a large portion of the past few years in a personal investigation of the Canadian situation, the results of which are so alarming that I have refrained from publishing my findings.

The theory of an annual growth that has been indulged in so freely in the past has simply become a popular delusion. There is, of course, a gross growth, and a net growth under some conditions, but to offset this the annual wastage by fire, wind, insects and fungi, taking the country as a whole, far over-runs the gross growth. Consequently we are simply consuming our capital year after year.

If anyone has any question as to the enormous amount of this wastage, let him explore the woods of Ontario, Quebec and New Brunswick, where one can travel day after day and see nearly everywhere the vast destruction caused by the spruce bud worm alone. There are millions of acres in these provinces where over fifty per cent of the standing pulpwood has been completely destroyed.

To emphasize further this question of growth, it is only necessary to refer to the recent reports on the growth in some sections of Quebec, which show only about 30 board feet per acre, meaning about one 6 inch tree per acre per year. It has never been disputed that there is no actual accretion in virgin timber as the mortality more than offsets all growth. Furthermore, even in cut-over land when one realizes that it is only necessary to have an average of one ordinary sized tree per acre per year blow down, how easy it is to see that the annual growth is wiped out by this one process of destruction. I have seen thousands of acres laid flat by wind, not only in cut-over lands but also in so-called virgin stands. So much for wind.

Now with regard to the losses from forest fires, the spruce bud worm, borers and fungi. The figures are so appalling that I dare not commit the result of my findings to print, but these losses are so enormous that no one who is sincere will attempt to deny that they far over-balance any annual growth that there is in Canada or the United States. Cut out this mythical annual growth theory and what are we doing? As I said before, we are simply using up our capital.

One often sees the statement in print that we are "using more than three times our annual growth," while in fact, as previously stated, there is no annual growth to use, for the reason that enemies of the forest, cited above, destroy much more than the growth.

The timberland owner has the satisfaction of knowing that even if he has lost one half of his standing timber, by the ravages of the spruce bud worm, still what he has left is worth double the previous price per cord, as the destruction is country wide, and the consequently diminished supply will necessarily create an immediate and substantial advance in land and stumpage prices.

If some of the paper mills of the United States had not gone so far afield for their wood last year by invading the more remote sections of Ontario and Quebec, where the freight alone amounted to \$16.00 or more per cord and accepted wood down to a diameter limit of one and one half to two inches, they would be short of wood to-day.

Logging by Aeroplane—Not Yet.

In some of the wild estimates of our supply of standing timber made in the past, they have simply taken

the map of Canada, determined the number of square miles, and arbitrarily figured so many cords per acre. Now as logging by aeroplane has not been perfected as yet, there are only two ways you can get out wood, namely, by river or railroad. About all the more important rivers of Canada have been logged on and driven, from the very earliest days. Many of them have been practically stripped or cut out, while others are being operated pretty well back to their head waters, so far remote that it takes two years or more to drive logs to the mills.

In the case of the railroads the condition is pretty much the same with the exception of possibly the Transcontinental, but inasmuch as this road was built beyond the height of land, there is very little wood available north of this road, as the rivers all drain away from it towards Hudson Bay. This leaves only the territory that lies south of the railroad, but as sawmills are springing up along this line, like mushrooms over night, and as fire is taking a heavy toll in this section, the paper mills will derive only a small supply from this source. Every time a railroad is built in a wooded country, more wood is burned up than is hauled out.

When talk is made about obtaining pulpwood from the cold northern sections that have not been opened up, where it takes 150 years to grow a four inch tree, where the snow falls to a depth of 15 feet and the thermometer registers 50 below zero, it will be only when pulpwood has reached a price more than \$75.00 per cord. We hear Alaska suggested as a possible field for the making of paper, but all of the above handicaps apply to this section, except along the coast, as well as the fact that it is 4000 miles distant from the large paper consuming market.

All anyone needs to know is that in the United States more than 5,500,000 cords of wood are used annually for pulp alone, in order to realize that this appalling shrinkage in our capital stock of standing timber must necessarily all too soon wipe out the remaining supply.

Beyond Conception Is 5½ Million Cords

I want the reader to pause a moment when he reads this paragraph, five million five hundred thousand cords—not feet, but cords, used every year in the

United States for pulp, and principally in the Eastern and Middle States. Few can realize just what this really represents, but to try and make this comprehensible, it means a solid pile of four foot wood, twelve feet high reaching clear across the continent, or a pile four feet high, nine thousand miles long, and yet we may travel for days on the railroads and hardly see a spruce tree. Personally I should not want to take the contract to furnish this amount for even one year, and where is it to come from after the next ten years?

Imagination can hardly grasp the real significance of the terrifying estimate of the annual consumption of all wood products in the United States, namely 244 million cords. Even this estimate of consumption is doubtless conservative, as it is impossible for the Government to obtain complete reports of all actual production.

Tremendous Losses by Fire.

In addition to this enormous amount that is being cut, fire is taking a terrible toll as well. Over a billion feet of timber was destroyed this present year in just one State—Montana. This means two million cords or nearly half the entire amount consumed for pulp in one year, destroyed by the fire fiend in one state. Last year the same thing happened in Minnesota, and this same thing has been going on since this country was first settled and to such an extent that 75 per cent of the original stand of timber has been destroyed by this same cause, and yet some authorities will still talk of an annual growth.

It is a curious fact that some of the coldest sections are the most prone to fire, such as Newfoundland, British Columbia, Northern Ontario, Northern Quebec, Minnesota, Alaska, etc. These fire zones are just as well defined as land and water.

Increase in Consumption Overlooked.

In many of the estimates that have been made as to the length of time our standing timber will last, the important question of the increase in consumption is quite overlooked, and as showing what an important factor this is, I will simply cite a 5 year period in the St. Maurice Valley, where the increase amounted to 200%, or at the rate of 40% per year.

Thus far I have largely discussed principally the pulp-wood consumption, and yet when you add to this the extraordinary demand we have in sight for lumber for new construction the world over, it simply adds to the danger that is facing this country from a premature exhaustion of a supply of raw material for our magnificent paper mills, which to-day are the second most important industry in Canada, and which with a proper and judicious guarding of our raw material, will shortly occupy first position.

The paper mills which have a wood supply will make large profits in the future, as there are so many American mills which have no supply of their own and will be forced out of business on that account, which will make a continued shortage of paper from this time on. Furthermore, no government can for any length of time, interfere with the natural law of supply and demand, or make a spruce tree grow in less than 50 to 75 years.

As showing what effect lumber and other products of wood may have on the price and scarcity of pulpwood, I will simply note that in some sections, owing to the abnormally high price of laths, pulpwood is being sawn into laths netting from \$30.00 to \$35.00 per cord for the wood at point of shipment.

Prophecy Has Come True.

In an article which I wrote three years ago when the publishers were complaining of $2\frac{1}{4}$ cents paper. I then stated that the question of the future would be not one of price, but of obtaining paper at any price.

That prediction has already proved only too true in a much shorter time than I anticipated.

I have devoted the past 28 years to the study of the one subject of timberlands and wood supply, and during this period I have seen lands go from \$1 to \$15, \$20 and up as high as \$50 per acre for the same lands; and stumpage go for \$1.50 for a mark of logs that only took 4 to the thousand, to a price of \$20 per 1000 for a mark of 12 to the thousand; pulpwood from a low price of four dollars to a high of thirty-two dollars per cord, and spruce lumber from a low of twelve to a high of sixty dollars per thousand. Stumpage in New

Brunswick even has been sold as high as \$15 per thousand during the present year.

In 1890 they were cutting trees that took not more than six or seven to make a thousand feet of lumber, while to-day they are cutting to such a small diameter limit that in many sections it takes 40 trees to make a thousand feet. I saw one pile of wood out on the Transcontinental containing 4000 cords, where the largest stick was $4\frac{1}{2}$ inches and from that it ran to $1\frac{1}{2}$ inches, with the average size running under 3 inches.

In one section of the Pacific Coast where the United States Government estimate a stand of eighty-six billion feet, the highest authority in the timber cruising line, and one who knows more of that particular section than any other man, from actual cruises says the figure 8 wants to be dropped, as there is not over 6 billion at the very most. Another example I have in mind is a certain territory which was estimated to contain 25 million cords of pulpwood and where, after operating 7 or 8 years, and cutting out only about 250 thousand cords, all the available wood was cut, and at a severe loss, so that further operations of the property was abandoned.

I have in mind another limit that had been estimated to contain 16 cords to the acre, that was examined by a very competent cruiser, who found it ran nearer 16 acres to the cord, as he expressed it. I can cite several cases where the shrinkage in estimates are just as striking as those above enumerated.

In connection with this phase of the subject, I cannot help thinking of the reply an old lumberman made when at one of the Canadian Forestry meetings in Montreal. The question of shortage in supply was being discussed, and one of the members suggested that we did not know what there might be for timber in the unexplored regions. The old lumberman replied that "in any section that the Canadian lumbermen did not know what there was, there wasn't anything."

More Attention to Mills than Materials.

The great trouble with the paper mills in the past has been that the management have been devoting their whole thought and time to speeding up their paper machines, installing new and improved machinery.

and improving their water powers, all of which is of course, very desirable; but while they have been doing this they have lost sight of the most vital question, viz. a supply of raw material to keep these mills running.

The newspaper publishers are not without blame for the present shortage in newsprint, for every time they have fought a legitimate advance in price, they have made it more difficult and expensive for the mills to do business, especially under Government control and regulation, and with regard to price it is not nearly as surprising that newsprint has advanced from 2 to 4 cents per pound and higher than it is that eggs have advanced from 25c to \$1.00 a dozen. A hen can be produced in a year, while these trees that are being made into paper have taken from 75 to 250 years to grow, and as they are becoming more and more remote from the mills, must necessarily become more costly to procure. Think even of the cost of toting supplies back into the woods, a distance of 70 miles, the cost of which in many instances, amounts from \$50 to \$60 per ton for haulage alone!

Newspapers must accept the inevitable, as all other legitimate lines of business have done, and simply pass the cost along by increasing the price of their papers and their advertising rates. The newspaper has become a public necessity—no one will do without it to-day, and papers will sell just the same, whether the price is, 2, 3, or 5 cents per copy. And when the paper mills are forced to use some annual crop as a substitute for trees in making paper (which time is not far distant) paper instead of costing 4 cents per pound will cost 24 cents or more. So far as the American publishers are concerned, it is of course immaterial to them whether newsprint comes from Canada or the United States, so long as they are assured of a paper supply while the trees last.

When the public begins to realize that this timber, which is being cut today as if it were an annual crop, has been growing from 75 to 250 years, and the only way it can be reproduced is by re-planting, planting with the present high cost of labor amounts to a matter of \$12 to \$15 per acre, to which must be added the cost of the land, which is from \$3 to \$10 per acre, something will be done. This brings the cost per acre of these plantations of tiny little seedlings from

\$15 to \$25, with an annual charge for interest, taxes and fire protection for at least a matter of 50 to 75 years before another crop can be harvested.

In addition to this there is a possible loss from fire and the spruce bud worm, and other enemies; for it must be borne in mind that fire is always with us, and the bud worm returns in cycles of from 20 to 35 years, and further, that each recurrence, as the lands become harder cut, increases in violence.

Imminent Increase in Price of Timberland.

As soon as the above facts are absorbed, as they are beginning to be quite rapidly at the present time, timberlands will be selling on a much higher scale than they are to-day, and my prediction is that the biggest rise in timberland values that has ever been known, will take place within three years.

There is not a commodity in the world that is selling so much below its real value as an acre of timberland to-day. Think of a crop that has been 50 to 250 years growing, and that under most favorable conditions will take from 50 to 75 years to reproduce with all the attendant risks, and an actual cost of \$75.00 to \$125.00, selling today at \$10 to \$15 per acre for land and all, while an annual crop of cereal or potatoes brings from \$15 to \$100 or even more per acre, above cost of planting and harvesting, and without the land.

Reforestation Will Help

With regard to reforestation, I am glad to note that the bud worm has not invaded this part of Nova Scotia owing largely to the fact that it is practically all spruce, the amount of fir being almost negligible, and probably also to the fact that the spruce is of such a sound, vigorous and rapid growth. I presume that the quality and growth here is due to the fact that soil and climatic conditions are ideal for spruce growing, the amount of precipitation being very great. Records at Halifax covering a period of 35 years show an average annual rainfall of 57 inches.

I have a sample section of red spruce tree in my office that shows a growth of 20 inches in 20 years, an inch a year in diameter. That is of course abnormal, but it is a fact that spruce makes the most rapid growth here of any section on this Continent, which hints at possibilities in reforestation that are not applicable elsewhere. This phase is well worth the

serious consideration and careful investigation of the Canadian Forestry Association.

In the old days when railroads were first built in Nova Scotia and timberlands were of little value and there was no such thing as fire protection, this Province shared the fate of the rest of Canada and vast areas were destroyed by fire, but this is a thing of the past, as Nova Scotia has to-day one of the very best forest fire protective systems, and her citizens are thoroughly alive to the fact that timber is one of the most important assets.

How to Remedy this Situation.

It is far better to look this question of a rapidly diminishing timber supply squarely in the face and try by practical methods to put off the day of reckoning as long as possible, and I advocate the following remedial measures:

An active campaign of education carried on by literature, and illustrated lectures, so as to reach all timberland owners and the public in general.

The creation of a strong public sentiment by various methods, so as to establish a greater appreciation of the value of forests to all, and a desire on the part of the public to help actively in preventing forest fires.

Improvement and enlargement of the present fire protective service.

Reforestation on a large scale by Governmental appropriation, regardless of cost.

Burning of slash under certain conditions and in certain cases.

Change the present wasteful methods of logging by a closer supervision of woods operations by intelligent practical foresters.

An embargo or export duty on raw material taken from fee lands; or the

Annual purchase of fee land wood by a combination of all the Canadian mills.

I will personally subscribe ten thousand dollars to the Canadian Forestry Association, if each of the other pulp and paper mills in Canada will subscribe a like amount, to be used in carrying out the work outlined above, under the direction of an Executive Committee to be appointed by the subscribers to the Fund. This will give us a fund worthy of the name and will enable us to do some real work.

I am giving freely of my time and money towards an educational campaign along these lines, as I feel that it is the duty of every Canadian citizen to do everything in his or her power to safeguard, preserve and perpetuate our forest resources as they are the backbone of our country.

FRANK J. D. BARNJUM.
Annapolis Royal, N.S., Dec. 22, 1919.

Biographical Note

Mr. Barnjum is not a stranger to Montreal as it is the city of his birth, being a son of Francis E. Barnjum who came to Canada from London, England, in 1856, and a nephew of Major Fred. S. Barnjum who was one of Montreal's best known citizens forty years ago.

Mr. Barnjum's business career began with the firm of Taylor Brothers, in the old Union Building on St. Francis Xavier St., as office boy. He later moved to Maine, where his first timberland purchase was made twenty-eight years ago and from there to Nova Scotia, where he has been largely interested for the past twenty years.

The Pulp and Paper Magazine is glad to have Mr. Barnjum's frank statement of conditions and to note his generous offer to help the friends of the forest.

STRAIGHT TALK ABOUT OUR FORESTS.

(Editorial Comment in Pulp and Paper Magazine
January 1, 1920.)

It is almost a paradox the way it is necessary to temper with a warning the frequent references to the extent of Canada's forest resources. We have enormous forests in Canada, collectively speaking, but the conditions surrounding their growth and deterioration are usually lost sight of in the rosy remarks on their geographical extent.

Every land has its prophets and enthusiasts who must always be the leaders of thought and action. On them falls the burden of blazing the trail. Canada is blessed with many conscientious and enthusiastic friends of her forests. If it were not so, the future of the industries based on this source of raw material would be dark

indeed. The situation is serious enough as it is, and would be more so but for the ray of hope in the efforts of those who are devoting energy, ability and means to such a deserving public cause as the perpetuation of our forests and their exploitation in such a way as to afford the greatest benefit to the people of Canada.

Among the forest prophets of Canada appears Frank J. D. Barnjum of Nova Scotia. Heretofore he has been a comparatively silent worker. From now on his voice will be heard and his writings will be read. On another page of this magazine he makes some statements regarding the present and future of our forests that would be even more startling but for the foundation already laid in the work and words of Wilson, Black, Howe, Power, Sorgus, Prince, Campbell, Craig, and others.

Of particular significance in Mr. Barnjum's article is the comparison between annual growth and the results of destroying agents, such as fires, fungi, insects, wind, etc. The necessity of taking these facts into consideration has been pointed out by Howe and others, but the situation has apparently not made a sufficient impression on the public mind or on the minds of those who are inclined to exaggerate Canada's forest wealth. When a tree takes 75 to 150 years or more to mature and their number is as few per acre as in many so-called forest areas, one requires no great genius to appreciate how soon an enemy attack will more than wipe out any annual growth. This applies also to regions where the increment is perceptible.

We fully agree with Mr. Barnjum that as much Canadian wood as possible should be retained in Canada to supply raw material to Canadian industries employing Canadian labor. We further believe that the use of an embargo or export duty on wood whose export is now permitted, is only a partial remedy of the situation. It would hardly be right to prevent a farmer, say, from selling his wood abroad if there was no home market for it, any more than the pulp and paper mills should be throttled if Canadian enterprises are not starved by export sale of their surplus. The matter of disposing of such fee land wood, is, as our correspondent suggests, largely a question of organizing and educating the Canadian consumer of such wood to make the market for it.

It may not be economically possible for some mills to buy this material in competition with hungry American concerns, desirable as such action would be from the standpoint of forestry policy. To our mind the advantage to the Canadian mill in having a larger supply of easily available material, while important, is by far a secondary consideration in comparison with the fundamental purpose of our forest policy, namely, the perpetuation of the forest. It is quite foolish to turn off the spigot while the barrel leaks at the bung, even though some material may be saved.

So we specially commend Mr. Barnjum's proposal and generous offer of assistance in the matter of a more intensive and extensive educational campaign to advise the Canadian people as to the true condition of their forest wealth. It is sure to follow an enlightenment of the public that proper restrictions and regulations will be enacted and properly enforced so that future generations will say that we have properly conceived and discharged our duty in passing on an incomparable inheritance. Surely the wood using industries will support this fine offer to help the Canadian Forestry Association and other agencies in spreading the true conception of present conditions and the gospel of true forest protection—perpetuation.

There ought to be a widespread discussion of Mr. Barnjum's article. His statements deserve most thoughtful consideration.